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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,880	11/28/2001	Thomas A. Koes	50884	1611

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EXAMINER

LEE, SIN J

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/995,880

Applicant(s)

KOES, THOMAS A.

Examiner

Sin J. Lee

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. In view of the amendment of February 22, 2005, previous objection on claims 5 and 19 and previous rejection on claims 1-20 under 35 U.S.C. 112, first paragraph is hereby withdrawn.
2. In view of the amendment of February 22, 2005, previous 103(a) rejection on claims 1-20 over Barr et al'725 is hereby withdrawn. The amended claims 1, 12 and 18 now require the amount of the organic acid to be 0.5-5 parts per 40 parts of polymeric binder on a dry weight basis, which converts to 1.25-12.5 wt.% of organic acid based on the polymeric binder on a dry weight basis. Barr's o-phthalic acid is used in the amount of 0.117wt% based on the total dry weight of his binders. Thus, Barr does not teach or suggest present inventions of claims 1-20 anymore.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6 and 8-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishikawa et al (4,671,854).

Ishikawa teaches a method of preparing a printed circuit board with solder plated circuit and through-holes, using a specifically prepared photoresist material and a combination of exposure, development, solder plating and etching means (see abstract). In Example 2, Ishikawa specifically teaches a photocurable photosensitive

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resin composition which contains (i) 100 parts of resinous binder of copolymer of *methacrylic acid*, styrene, unsaturated compound obtained by equimolar reaction of gallic acid and glycidyl acrylate and butyl acrylate, (ii) 2-hydroxy-2-methyl propiophenone (a photoinitiator), and (iii) 3 parts (*which gives 3 wt% based on the copolymeric binder*) of sodium ethylenediamine tetraacetate. Ishikawa furthermore teaches (col.4, lines 41-45) that the sodium ethylenediamine tetraacetate and ethylenediamine tetraacetic acid can interchangeably be used as his particularly preferred chelating agent (the chelating agent giving an improved alkaline solution development). Based on this teaching, one skilled in the art would immediately envisage using 3 parts (*which gives 3 wt% based on the copolymeric binder*) of ethylenediamine tetraacetic acid in Ishikawa's Example 2. Since this amount falls within the present range (1.25-12.5 wt.% of organic acid based on the polymeric binder), the prior art teaches present inventions of claims 1-5 (Ishikawa's ethylenediamine tetraacetic acid is an acetic acid), 10 and 11.

Ishikawa forms his photosensitive resin layer onto a printed circuit board (which is previously covered with a conductive coating) by an electrodeposition means, exposes his photosensitive resin layer through a mask of circuit pattern, *removes the uncured* photosensitive resin from the unexposed area with aqueous solution of sodium carbonate (*which is an alkaline aqueous solution*), thereby forming a circuit base plate (see Example 2). Therefore, the prior art teaches present inventions of claims 6, 8, 9, 12-19.

With respect to present claim 20, after stating that particular preference for his chelating agent is given to ethylenediamine tetraacetic acid and its salts, Ishikawa furthermore teaches (see col.4, lines 41-45) that gluconic acid, citric acid, and their sodium or amine salts may be satisfactorily used. Based on this teaching, one skilled in the art would immediately envisage using citric acid (present substituted C₃ alkyltricarboxylic acid) as Ishikawa's chelating agent. Thus, the prior art teaches present invention of claim 20.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (4,671,854) in view of Imai et al (6,140,025).

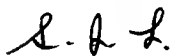
As discussed above in Paragraph 4, Ishikawa uses in his Example 2 a photocurable photosensitive resin composition that contains 2-hydroxy-2-methyl propiophenone (which is a photoinitiator). Such propiophenone compound is known in the art to be equivalent to benzophenone as photoinitiators used in a negative type photosensitive resin composition, as evidenced by Imai, col.6, lines 40-50. Therefore, it would have been obvious to one skilled in the art to use benzophenone in Ishikawa's Example 2 with a reasonable expectation of obtaining a printed circuit-board bearing a

high density circuit pattern. Thus, Ishikawa in view of Imai would render obvious present invention of claim 7.

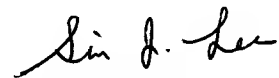
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
August 2, 2005



SIN LEE
PRIMARY EXAMINER